**Precalculus Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Notes 2.2 (Part 2)**

1. **Sketching the graph of a polynomial function**

**Ex. 1:** Sketch the graph of *f(x)* = -2x3 + 6x2 – x.

Step 1: Apply the Leading Coefficient Test.

Step 2: Find the zeros of the polynomial. (Factor)

Step 3: Plot a few additional points.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Interval** | **Value of *f(x)*** | **Sign of *f(x)*** | **Point on graph** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Step 4: Draw the graph.

1. **Intermediate Value Theorem**

IVT tells you the existence of REAL zeros of polynomial functions.

Let *a* and *b* be real numbers such that *a* < *b*. If *f* is a polynomial function such that

*f(a)* ≠ *f(b)*, then, in the interval [*a, b*], *f* takes on every value between *f(a)* and *f(b)*.

**Ex. 2:** Use the Intermediate Value Theorem to approximate the real zero of *f(x)* = x3 – x2 + 1.

|  |  |
| --- | --- |
| *x* | *f(x)* |
|  |  |
|  |  |
|  |  |
|  |  |